ABSTRACT OF THE DISCLOSURE

A two-way cable network offering high-speed broadband communications delivered via virtual private networks over a multi-channel shared media system. Bi-directional transmission of packet to ATM cell based communications is established between a head end communication controller and a number of subscriber terminal units, whereby individual cells are prioritized and routed according to a virtual connection. Virtual connections are organized to support multiple virtual private networks in a shared media CATV system. The virtual private network to which a particular STU belongs is user selectable and has the flexibility of handling multi up/downstream channels with different MAC domains. The present invention can also handle non-ATM MAC domains via the same common ATM switch. To overcome the limited number of addresses inherent to common ATM switches, a mapping/remapping function is implemented in the port cards. Furthermore, downstream as well as upstream traffic are filtered at each STU. In one embodiment, information pertaining to downstream traffic is used to implement predictive scheduling in order to improve the timing associated with the request/grant cycle. In another embodiment, a user has the ability to select a quality of service that best suits the needs of the current application. In a further embodiment, the scheduling function is associated with each of the receivers in order to provide improved scalability.